

**WHAT IS CLAIMED IS:**

1. A system, comprising:

one or more data storage devices comprising a file system;

5 one or more data backup devices; and

a two-tier backup mechanism configured to:

periodically or aperiodically back up candidate static data from the file  
system to second-tier backup media on the data backup devices,  
wherein the candidate static data are data in the file system that  
10 have not been modified for a specified period;

periodically or aperiodically back up dynamic data and the candidate static  
data from the file system to first-tier backup media on the data  
backup devices, wherein the dynamic data are data in the file  
system that have been created or modified in the specified period;  
15 and

wherein only metadata for static copied data is backed up from the file  
system to the first-tier backup media, wherein the static copied data  
are static data in the file system for which a specified number of  
copies have been previously backed up to the second-tier backup  
20 media.

2. The system as recited in claim 1, wherein the file system does not include  
infrastructure to support Hierarchical Storage Management (HSM).

25 3. The system as recited in claim 1, wherein the file system supports Hierarchical  
Storage Management (HSM) but HSM is not implemented on the file system.

4. The system as recited in claim 1, wherein the file system supports Hierarchical  
Storage Management (HSM) and HSM is implemented on the file system.

30

5. The system as recited in claim 1, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

6. The system as recited in claim 1, further comprising a restore mechanism  
5 configured to:

restore the dynamic data, the candidate static data, and the metadata for the static  
copied data from a first-tier backup to the file system;  
make the file system operational after said restore from the first-tier backup; and  
schedule one or more background processes to restore one or more portions of the  
10 static copied data from the second-tier backup media to the file system;  
wherein the background processes are configured to use the restored metadata for  
the static copied data to locate the static copied data on the second-tier  
backup media.

15

7. A system, comprising:

a processor; and

a memory comprising program instructions, wherein the program instructions are  
executable by the processor to implement a two-tier backup mechanism  
20 configured to:

20

periodically or aperiodically back up candidate static data from a file  
system to second-tier backup media, wherein the candidate static  
data are data that have not been modified for a specified period;

25

periodically or aperiodically back up dynamic data and the candidate static  
data from the file system to first-tier backup media, wherein the  
dynamic data are data that have been created or modified in the  
specified period; and

30

wherein only metadata for static copied data is backed up from the file  
system to the first-tier backup media, wherein the static copied data  
are static data for which a specified number of copies have been  
previously backed up to the second-tier backup media.

8. The system as recited in claim 7, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

5 9. The system as recited in claim 7, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

10. The system as recited in claim 7, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

10

11. The system as recited in claim 7, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

12. The system as recited in claim 7, wherein the program instructions are executable  
15 by the processor to implement a restore mechanism configured to:

restore the dynamic data, the candidate static data, and the metadata for the static  
copied data from a first-tier backup to the file system;

make the file system operational after said restore from the first-tier backup; and  
schedule one or more background processes to restore one or more portions of the

20 static copied data from the second-tier backup media to the file system;  
wherein the background processes are configured to use the restored metadata for  
the static copied data to locate the static copied data on the second-tier  
backup media.

25 13. A system, comprising:  
means for periodically or aperiodically backing up candidate static data from a file  
system on one or more data storage devices to second-tier backup media  
on one or more data backup devices, wherein the candidate static data are  
data that have not been modified for a specified period;

means for periodically or aperiodically backing up dynamic data and the candidate static data from the file system to first-tier backup media on the data backup devices, wherein the dynamic data are data that have been created or modified in the specified period; and

5 wherein only metadata for static copied data is backed up from the file system to the first-tier backup media on the data backup devices, wherein the static copied data are static data for which a specified number of copies have been previously backed up to the second-tier backup media.

10 14. A method, comprising:  
periodically or aperiodically backing up candidate static data from a file system to second-tier backup media, wherein the candidate static data are data that have not been modified for a specified period;  
periodically or aperiodically back up dynamic data and the candidate static data  
15 from the file system to first-tier backup media, wherein the dynamic data are data that have been created or modified in the specified period; and  
wherein only metadata for static copied data is backed up from the file system to the first-tier backup media, wherein the static copied data are static data for which a specified number of copies have been previously backed up to  
20 the second-tier backup media.

15. The method as recited in claim 14, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

25 16. The method as recited in claim 14, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

17. The method as recited in claim 14, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

30

18. The method as recited in claim 14, wherein the two-tier backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

19. The method as recited in claim 14, further comprising:

5 restoring the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;  
making the file system operational after said restoring from the first-tier backup;  
and  
restoring at least a portion of the static copied data from the second-tier backup  
10 media to the file system after said making the file system operational,  
wherein the restored metadata for the static copied data are used to locate the static copied data on the second-tier backup media.

20. A computer-accessible medium comprising program instructions, wherein the  
15 program instructions are configured to implement:

periodically or aperiodically backing up candidate static data from a file system to second-tier backup media, wherein the candidate static data are data that have not been modified for a specified period;  
periodically or aperiodically back up dynamic data and the candidate static data  
20 from the file system to first-tier backup media, wherein the dynamic data are data that have been created or modified in the specified period; and  
wherein only metadata for static copied data is backed up from the file system to the first-tier backup media, wherein the static copied data are static data for which a specified number of copies have been previously backed up to  
25 the second-tier backup media.

21. The computer-accessible medium as recited in claim 20, wherein the file system does not include infrastructure to support Hierarchical Storage Management (HSM).

22. The computer-accessible medium as recited in claim 20, wherein the file system supports Hierarchical Storage Management (HSM) but HSM is not implemented on the file system.

5 23. The computer-accessible medium as recited in claim 20, wherein the file system supports Hierarchical Storage Management (HSM) and HSM is implemented on the file system.

24. The computer-accessible medium as recited in claim 20, wherein the two-tier  
10 backup mechanism is integrated with Hierarchical Storage Management (HSM) on the file system.

25. The computer-accessible medium as recited in claim 20, wherein the program instructions are further configured to implement:

15 restoring the dynamic data, the candidate static data, and the metadata for the static copied data from a first-tier backup to the file system;  
making the file system operational after said restoring from the first-tier backup;  
and  
restoring at least a portion of the static copied data from the second-tier backup  
20 media to the file system after said making the file system operational,  
wherein the restored metadata for the static copied data are used to locate the static copied data on the second-tier backup media.

26. A system, comprising:  
25 a processor; and  
a memory comprising program instructions, wherein the program instructions are executable by the processor to implement a two-tier backup mechanism configured to:  
perform one or more second-tier backups to back up candidate static files  
30 from a file system to second-tier backup media, wherein the

candidate static files are files that have not been modified for a specified period;

perform a first-tier backup, wherein, in the first-tier backup, the two-tier backup mechanism is configured to, for each file on the file system:

5 determine if the file is a dynamic file or a static file, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

10 if the file is a dynamic file, copy the dynamic file to first-tier backup media;

if the file is a static file, determine if the static file is a candidate static file or a static copied file according to a specified number of copies of the static file on the second-tier backup media;

15 if the file is a candidate static file, copy the candidate static file to the first-tier backup media; and

if the file is a static copied file, copy only metadata associated with the static copied file to the first-tier backup media.

20

27. The system as recited in claim 26, wherein Hierarchical Storage Management (HSM) is not implemented on the file system.

28. A method, comprising:

25 performing one or more second-tier backups to back up candidate static files from a file system to second-tier backup media, wherein the candidate static files are files that have not been modified for a specified period;

performing a first-tier backup, wherein said performing a first-tier backup comprises, for each file on the file system:

determining if the file is a dynamic file or a static file according to the specified period, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

5 if the file is a dynamic file, copying the dynamic file to first-tier backup media;

if the file is a static file, determining if the static file is a candidate static file or a static copied file according to a specified number of copies of the static file on the second-tier backup media;

10 if the file is a candidate static file, copying the candidate static file to the first-tier backup media; and

if the file is a static copied file, copying only metadata associated with the static copied file to the first-tier backup media.

15 29. The method as recited in claim 28, wherein Hierarchical Storage Management (HSM) is not implemented on the file system.

30. A computer-accessible medium comprising program instructions, wherein the program instructions are configured to implement:

20 performing one or more second-tier backups to back up candidate static files from a file system to second-tier backup media, wherein the candidate static files are files that have not been modified for a specified period;

performing a first-tier backup, wherein said performing a first-tier backup comprises, for each file on the file system:

25 determining if the file is a dynamic file or a static file, wherein dynamic files are files that have been created or modified in the specified period and static files are files that have not been created or modified in the specified period;

if the file is a dynamic file, copying the dynamic file to first-tier backup media;

30



if the file is a static file, determining if the static file is a candidate static  
file or a static copied file according to a specified number of copies  
of the static file on the second-tier backup media;  
if the file is a candidate static file, copying the candidate static file to the  
5 first-tier backup media; and  
if the file is a static copied file, copying only metadata associated with the  
static copied file to the first-tier backup media.

31. The computer-accessible medium as recited in claim 30, wherein Hierarchical  
10 Storage Management (HSM) is not implemented on the file system.